

AMENDMENTS TO THE CLAIMS

1-4 (Cancelled).

5. (Currently Amended) A method for injection-molding a molded article having a hollow portion by means of an injection-molding apparatus, said apparatus comprising:

a mold assembly having

a first-molten-resin injection portion for injecting a first molten thermoplastic resin into a cavity of the mold assembly,

a second-molten-resin injection portion for injecting a second molten thermoplastic resin into the cavity of the mold assembly, and

a pressurized-fluid introducing portion for introducing a pressurized fluid into the second molten thermoplastic resin injected into the cavity;

a first injection cylinder communicating with the first-molten-resin injection portion; and

a second injection cylinder communicating with the second-molten-resin injection portion;

said method comprising:

injecting the first molten thermoplastic resin from the first injection cylinder into the cavity through the first-molten-resin injection portion;

initiating injection of the second molten thermoplastic resin from the second injection cylinder into the cavity through the second-molten-resin injection portion, without bringing the second molten thermoplastic resin into contact with the first molten thermoplastic resin injected into the cavity, concurrently with the start of said injecting the first molten thermoplastic resin into the cavity, during said injecting the first molten thermoplastic resin into the cavity, or after completion of said injecting the first molten thermoplastic resin into the cavity; and

introducing the pressurized fluid into the second molten thermoplastic resin in the cavity from the pressurized-fluid introducing portion during said injecting the second molten thermoplastic resin into the cavity or after completion of said injecting the second molten thermoplastic resin into the cavity ~~to thereby~~ to form the hollow portion only inside the second molten thermoplastic resin, which hollow portion does not extend to the first molten thermoplastic resin, and to bring the second molten thermoplastic resin into contact with the first molten thermoplastic resin.

6. (Previously Presented) The method according to claim 5, wherein the first molten thermoplastic resin comes into contact with the second molten thermoplastic resin in said introducing the pressurized fluid into the second molten thermoplastic resin in the cavity, the first molten thermoplastic resin being in a molten state when the first molten thermoplastic resin comes into contact with the second thermoplastic resin.

7. (Previously Presented) The method according to claim 5, wherein a portion of the first molten thermoplastic resin comes in contact with the second molten thermoplastic resin in said introducing the pressurized fluid into the second molten thermoplastic resin in the cavity, the portion of the first molten thermoplastic resin coming into a re-melted state due to the contact thereof with the second molten thermoplastic resin.

8. (Previously Presented) A method for injection-molding a molded article having a hollow portion by means of an injection-molding apparatus, said apparatus comprising:

a mold assembly having a first-molten-resin injection portion for injecting a first molten thermoplastic resin into a cavity of the mold assembly, a second-molten-resin injection portion for injecting a second molten thermoplastic resin into the cavity, and a pressurized-fluid introducing portion for introducing a pressurized fluid into the second molten thermoplastic resin injected into the cavity;

a first injection cylinder communicating with the first-molten-resin injection portion, and a second injection cylinder communicating with the second-molten-resin injection portion; and

a movable partition member to be disposed in a portion of the cavity which is between a first cavity portion in which the first molten thermoplastic resin can occupy in the cavity and a second cavity portion in which the second molten thermoplastic resin can occupy in the cavity, the first-molten-resin injection portion and the second-molten-resin injection portion being disposed on opposite sides of the movable partition member, respectively;

said method comprising:

disposing the movable partition member in the portion of the cavity which is between the first cavity portion in which the first molten thermoplastic resin can occupy in the cavity and the second cavity portion in which the second molten thermoplastic resin can occupy in the cavity;

injecting the first molten thermoplastic resin from the first injection cylinder into the first cavity portion through the first-molten-resin injection portion;

extracting the partition member from the cavity;

injecting the second molten thermoplastic resin into the portion of the cavity in which the partition member occupied and into the second cavity portion from the second injection cylinder through the second-molten-resin injection portion; and

introducing the pressurized fluid into the second molten thermoplastic resin in the cavity from the pressurized-fluid introducing portion during the injection of the second molten thermoplastic resin or after completion of the injection thereof to thereby form the hollow portion inside the second thermoplastic resin.

9. (Previously Presented) The method according to claim 8, in which in said extracting said partition member from the cavity, the partition member is extracted from the cavity after the first molten thermoplastic resin is solidified to such an extent that movement of the partition member does not impair a form of the first molten thermoplastic resin.

10. (Previously Presented) The method according to claim 8, in which in said injecting the second molten thermoplastic resin, a portion of the first molten thermoplastic resin which portion comes in contact with the second molten thermoplastic resin comes to be in a re-melted state due to its contact with the second molten thermoplastic resin.

11. (Previously Presented) The method according to claim 8, in which a surface of the partition member which is to come in contact with the first molten thermoplastic resin has convexo-concave shapes.

12. (Previously Presented) The method according to claim 8, in which a direction in which the partition member is movable is nearly at right angles with the direction of a pressure exerted on the partition member by the first molten thermoplastic resin injected from the first-molten-resin injection portion into the first cavity portion.

13. (Previously Presented) A method for injection-molding a molded article having a hollow portion by means of an injection-molding apparatus, said apparatus comprising:

a mold assembly having a first-molten-resin injection portion for injecting a first molten thermoplastic resin into a cavity of the mold assembly, a second-molten-resin injection portion for injecting a second molten thermoplastic resin into the cavity, and a pressurized-fluid introducing portion for introducing a pressurized fluid into the second molten thermoplastic resin injected into the cavity;

a first injection cylinder communicating with the first-molten-resin injection portion;

a second injection cylinder communicating with the second-molten-resin injection portion; and

a movable partition member to be disposed in a portion of the cavity which is between a first cavity portion in which the first molten thermoplastic resin can occupy in the cavity and a second cavity portion in which the second molten thermoplastic resin can occupy in the cavity,

the first-molten-resin injection portion and the second-molten-resin injection portion being disposed on opposite sides of the movable partition member, respectively;

said method comprising:

disposing the movable partition member in the portion of the cavity which is between the first cavity portion in which the first molten thermoplastic resin can occupy in the cavity and the second cavity portion in which the second molten thermoplastic resin can occupy in the cavity;

injecting the second molten thermoplastic resin from the second injection cylinder into the second cavity portion through the second-molten-resin injection portion;

introducing the pressurized fluid into the second molten thermoplastic resin in the second cavity portion from the pressurized-fluid introducing portion during the injection of the second molten thermoplastic resin into the second cavity portion or after completion of the injection thereof to thereby form the hollow portion inside the second thermoplastic resin;

extracting the partition member from the cavity; and

injecting the first molten thermoplastic resin into the portion of the cavity in which the partition member occupied and into the first cavity portion from the first injection cylinder through the first-molten-resin injection portion.

14. (Previously Presented) The method according to claim 13, in which said extracting said partition member from the cavity is preceded by discharging of the pressurized fluid from the hollow portion formed inside the second thermoplastic resin.

15. (Previously Presented) The method according to claim 13, in which in said extracting said partition member from the cavity, the partition member is extracted from the cavity after the second thermoplastic resin is solidified to such an extent that movement of the partition member does not impair a form of the second thermoplastic resin.

16. (Previously Presented) The method according to claim 13, in which in said injecting the first molten thermoplastic resin, a portion of the second thermoplastic resin comes into contact with the first molten thermoplastic resin such that the portion of the second molten thermoplastic resin comes to be in a re-melted state due to its contact with the first molten thermoplastic resin.

17. (Previously Presented) The method according to claim 13, in which a surface of the partition member which is to come in contact with the second molten thermoplastic resin has convexo-concave shapes.

18. (Previously Presented) The method according to claim 13, in which a direction in which the partition member is movable is nearly at right angles with the direction of a pressure exerted on the partition member by the second molten thermoplastic resin injected from the second-molten-resin injection portion into the second cavity portion, or at right angles with the direction of a pressure exerted on the partition member by the pressurized fluid introduced from the pressurized-fluid introducing portion.

19. (Currently amended) A method for injection-molding a molded article having a hollow portion, said method comprising:

providing a mold assembly having a cavity disposed between a first molten resin injection portion and a second molten resin injection portion, and a pressurized-fluid introducing portion provided at an opening of the cavity;

injecting a first molten thermoplastic resin from a first injection cylinder into the cavity through the first-molten-resin injection portion;

injecting a second molten thermoplastic resin from a second injection cylinder into the cavity through the second-molten-resin injection portion, without bringing the second molten thermoplastic resin into contact with the first molten thermoplastic resin injected into the cavity, concurrently with inception of said injecting the first molten thermoplastic resin into the cavity,

during said injecting the first molten thermoplastic into the cavity, or after completion of said injecting the first molten thermoplastic into the cavity; and

introducing the pressurized fluid into the second molten thermoplastic resin in the cavity from the pressurized-fluid introducing portion during said injecting the second molten thermoplastic resin into the cavity or after completion of said injecting the second molten thermoplastic resin into the cavity to thereby to form the hollow portion only inside the second molten thermoplastic resin, which hollow portion does not extend to the first molten thermoplastic resin, and to bring the second molten thermoplastic resin into contact with the first molten thermoplastic resin.

20. (Previously Presented) The method according to claim 19, wherein the first molten thermoplastic resin comes into contact with the second molten thermoplastic resin in said introducing a pressurized fluid into the second molten thermoplastic resin in the cavity, the first molten thermoplastic resin being in a molten state upon coming into contact with the second molten thermoplastic resin.

21. (Previously Presented) The method according to claim 19, wherein a portion of the first molten thermoplastic resin comes into contact with the second molten thermoplastic resin in said introducing the pressurized fluid into the second molten thermoplastic resin in the cavity, the portion of the first of the first molten thermoplastic resin coming into a re-melted state due to the contact thereof with the second molten thermoplastic resin.

22. (Previously Presented) The method according to claim 5, wherein the first molten thermoplastic resin comes in contact with the second molten thermoplastic resin after the start of said introducing the pressurized fluid into the second molten thermoplastic resin in the cavity.

23. (Previously Presented) The method according to claim 5, wherein the first molten thermoplastic resin comes in contact with the second molten thermoplastic resin on or around a time of completion of said injecting the second molten thermoplastic resin into the cavity.
24. (Previously Presented) The method according to claim 5, wherein the first thermoplastic resin and the second thermoplastic resin have different properties from one another.
25. (Previously Presented) The method according to claim 19, wherein the first molten thermoplastic resin comes in contact with the second molten thermoplastic resin after the start of said introducing the pressurized fluid into the second molten thermoplastic resin in the cavity.
26. (Previously Presented) The method according to claim 19, wherein the first molten thermoplastic resin comes in contact with the second molten thermoplastic resin on or around a time of completion of said injecting the second molten thermoplastic resin into the cavity.
27. (Previously Presented) The method according to claim 19, wherein the first thermoplastic resin and the second thermoplastic resin have different properties from one another.